INPUT®

HIGHER EDUCATION MARKET SECTOR

Presentation to:

INFORMATION ASSOCIATES, INC.
Rochester, New York

December 17, 1986

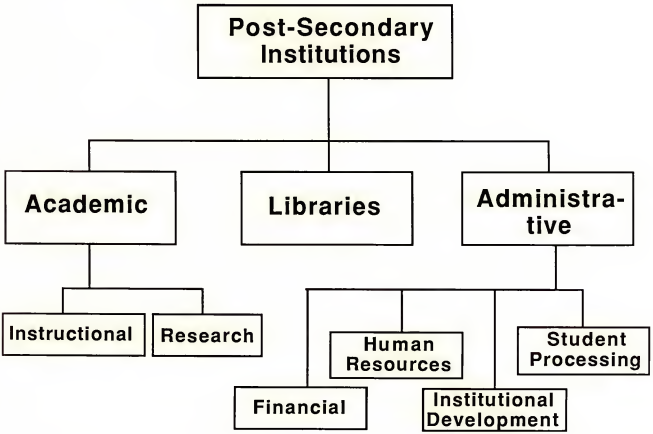
Peter A. Cunningham
President
INPUT

OUTLINE

- Overview
- Hardware
- Software
- System Integration
- Summary
- Opportunities

OVERVIEW

HIGHER EDUCATION MARKET APPLICATIONS



MARKET CHARACTERISTICS

- Universities Appointing CIOs
- Computer Center Staff Supports User Departments
- No "Single Vendor" Preference
  - Limited Integrated Software
  - Lack of Hardware or Software Standards

SALES CHARACTERISTICS

- "Reference" Sell
- User Committees Involved
- Long Sales Cycle
- Long Implementation Cycle
- Extensive Customer Support
- Inexpensive Software Modules
- Combine Modules to Form System

ROLE OF COMPUTERS IN HIGHER EDUCATION

- Demand Drivers
  - Attract Quality Faculty
  - Attract the Best Students
  - Provide Marketing Information
  - Offer Improved Service
- Demand Brakes
  - Budget Fluctuations
  - Low Perceived Importance of Computers
- Prognosis: Good

TECHNOLOGY TRENDS IN THE HIGHER EDUCATION MARKET

- From In-House to Vendor-Developed Software
- OA/E-Mail
  - Increasing in Administrative Offices
  - Requires Top Management Involvement
- "PCs = Pocket Calculator"
- More PC-Based Application Software Needed
- Progressive (Large?) Institutions
  - PCs Beyond Business and Engineering
  - Plan Extensive Networks
  - Consider RDBMS
  - Own Voice/Data Comm Facilities

CHANGING ROLE OF MIS DIRECTOR

- From "Techie" to CIO
- 1986: Manage Decentralization of Information
- 1988-1990: Manage Recentralization of Information

TRENDS IN ACADEMIC COMPUTING (I)

- DEC to Still Control
  - Increased Third Party Software
  - Favorable Marketing Agreements
  - Networks
  - "Next Generation Buyer" Exposure
  - DEC Preferred to IBM

TRENDS IN ACADEMIC COMPUTING (II)

- IBM Inroads Expected
  - 9370 Minicomputer
  - Improved Networking
  - Improved OS Migration

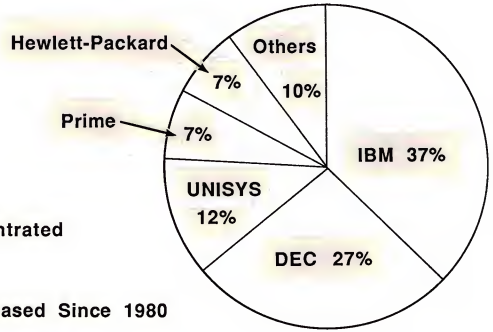
TRENDS IN ADMINISTRATIVE COMPUTING

- Continued Control by IBM
- IBM Vulnerabilities
  - Lack of OS Upgrade Path
  - Limited New Third Party Software
- Recentralization of Computing
  - MIS Director/CIO in Control
  - IBM Invented MIS/CIO Sell

HARDWARE

COMPUTER HARDWARE IN HIGHER EDUCATION MARKET SEGMENT

COMPUTER SYSTEMS SHIPPED, 1985



- Highly Concentrated
- DEC
  - Share Increased Since 1980
  - 1986: "Hot" Company

Source: CI

DEC HARDWARE INSTALLATIONS

- Total U.S. VAX Installations = 41,500
- U.S. Education Sector VAX Installations = 5,800
- Percent Installed in Administrative Computing = 30-35%
  - VAX Is Strong in Scientific/Technical Markets
  - DEC Donated Numerous VAXes for Academic Computing

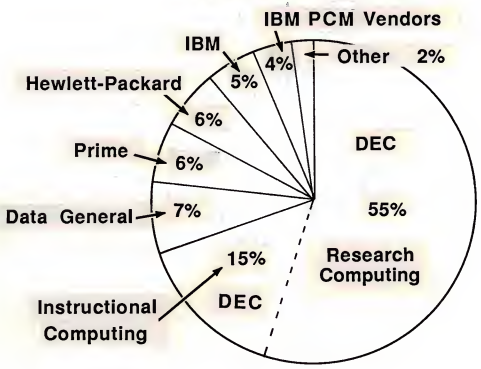
IBM AND DEC ACCOUNT BASES IN THE HIGHER EDUCATION MARKET SEGMENT

VENDOR	OWNERSHIP OF INSTITUTION		TYPE OF INSTITUTION			SIZE OF INSTITUTION		
	Public	Private	4-Year College	2-Year College	University	Large	Medium	Small
IBM	X		X	X	X	X	X	
DEC		X	X	X			X	X

- OVERLAP: Medium-Size Colleges

1985 VENDOR MARKET SHARE ACADEMIC COMPUTING

HIGHER EDUCATION ACADEMIC COMPUTING MARKET SHARE, 1985



Source: CI

SOFTWARE

SOFTWARE FOR HIGHER EDUCATION ADMINISTRATION (I)

- 2 Classes
  - Mainframe/Minicomputer
  - Microcomputer
- Administrative Software
  - >90% Is Mainframe/Mini Based
  - 1991: $101 Million
  - AAGR: 13%

SOFTWARE FOR HIGHER EDUCATION ADMINISTRATION (II)

- Users:
  - "Mix and Match" Approach
  - Little Integrated Software
  - Lack of Standards at Each School
- Demand Drivers:
  - Replacement of Non-Integrated Software
  - Upgrades
  - Improved Asset Management
  - Market and Demographic Data
- 5 Administrative Applications (Follow)

HUMAN RESOURCES

- Demand Drivers
  - Human Resources as Profit Center
  - "Cafeteria Style" Benefits Administration
  - Government Reporting Requirements
  - Employee Training and Education Administration
  - Tax Law Changes
- Prognosis: Good

STUDENT LOAN ADMINISTRATION

- Demand Drivers
  - Stringent Regulatory Requirements
  - Paperwork Intensive Applications
  - Growth of Government-Backed Student Loans
  - Timely Loan Processing and Followup
  - Up-to-the-Minute Reports
- Demand Brakes
  - Gramm-Rudman-Hollings Effect on Financial Aid
- Prognosis: Good

INSTITUTIONAL DEVELOPMENT

- Demand Drivers
  - Tuition has Never Covered Expenses
  - Expand Funding Sources
  - Track and Followup Funding Sources
  - Measureable Results ($)
  - Integrate with Accounting Software
- Demand Brakes
  - Lower Priority
  - Limited Integrated Software Available
- Prognosis: Fair

STUDENT REGISTRATION

- Demand Drivers
  - Service Differentiator
  - Improved Utilization of Facilities, Professors, and Teaching Assistants
  - Requires RDBMS
  - Dearth of Integrated Software
- Prognosis: Very Good

ACCOUNTING/FINANCIAL SYSTEMS

- Demand Drivers
  - Heart of Administrative Computing
  - Key User Applications
    - Purchasing
    - Job Tracking
    - Vehicle Management/Maintenance
    - Property Control
    - Accounts Receivable
- Prognosis: Good

RELATIONAL DBMS SOFTWARE IN HIGHER EDUCATION

- Large Schools Interested
- Installed DBMS Software
  - IMS/IDMS in 12% of Large Schools
  - Strong Competition by Independents
  - Must Rewrite to RDBMS
- RDBMS Administrative Applications
  - Human Resources
  - Loan Administration
  - Development
  - Registration
  - Accounting/Financial

SYSTEM INTEGRATION

SYSTEM INTEGRATION (I)

- Demand Drivers
  - Hardware Integration
  - Software Integration
- Demand Brakes
  - Limited Communications Requirements
    - Best Cases: Multiple Campus or Statewide Integration
    - Worst Case: Single LAN
    - Most Likely Case: Multiple LANs
  - Unanswered Questions
    - "Ownership" of Data in Shared Data Processing Environment
    - Data Security

SYSTEM INTEGRATION (II)

- Market Realities
  - Need: Software, Not Hardware, Integration
  - Limited Number of Target Establishments (Approximately 1,000)
  - Belief by Larger Schools of Greater In-House Capability
  - Heavily Discounted/Donated Equipment Leads to Expectation of Low-Cost
- Prognosis: Fair

SUMMARY

- Technology's Role: Help Attract Quality
- Long, Tough Sell
- Requires Extensive Support
- Administration Software
  - 13% AAGR
  - $100 Million in 1991
- DEC Dominates Academic Computing; IBM Leads in Administrative Computing

SPECIALIZED INTEGRATION OPPORTUNITIES

- University Hospitals
- Affiliated Research Institutions
- Supercomputer Centers
- "Media Integration" at Libraries
  - Newspaper
  - Magazines
  - Microfiche
  - CD-ROM
  - Books
  - Pamphlets
  - Diskettes

OTHER OPPORTUNITIES

- Good
  - Administrative Software
  - Relational DBMS
  - Software Integration
- Limited
  - Hardware/Communication Integration